

IN THE CLAIMS:**10 / 537509
JC17 Rec'd PCT/PTO 03 JUN 2005**

Please amend the claims as follows:

Claim 1 (Original): A method of cutting a semiconductor substrate, the method comprising the steps of:

irradiating a semiconductor substrate having a sheet bonded thereto by way of a die-bonding resin layer with laser light while locating a light-converging point within the semiconductor substrate, so as to form a modified region caused by multiphoton absorption within the semiconductor substrate, and causing the modified region to form a part which is intended to be cut; and

expanding the sheet after the step of forming the part which is intended to be cut, so as to cut the semiconductor substrate and die-bonding resin layer along the part which is intended to be cut.

Claim 2 (Original): A method of cutting a semiconductor substrate, the method comprising the steps of:

irradiating a semiconductor substrate having a sheet bonded thereto by way of a die-bonding resin layer with laser light while locating a light-converging point within the semiconductor substrate under a condition with a peak power density of at least 1×10^8 (W/cm²) at the light-converging point and a pulse width of 1 μ s or less, so as to form a modified region including a molten processed region within the semiconductor substrate, and causing the modified region including the molten processed region to form a part which is intended to be cut; and

expanding the sheet after the step of forming the part which is intended to be cut, so as to cut the semiconductor substrate and die-bonding resin layer along the part which is intended to be cut.

Claim 3 (Original): A method of cutting a semiconductor substrate, the method comprising the steps of:

irradiating a semiconductor substrate having a sheet bonded thereto by way of a die-bonding resin layer with laser light while locating a light-converging point within the semiconductor substrate, so as to form a modified region within the semiconductor substrate, and causing the modified region to form a part which is intended to be cut; and

expanding the sheet after the step of forming the part which is intended to be cut, so as to cut the semiconductor substrate and die-bonding resin layer along the part which is intended to be cut.

Claim 4 (Original): A method of cutting a semiconductor substrate, the method comprising the steps of:

irradiating a semiconductor substrate having a sheet bonded thereto with laser light while locating a light-converging point within the semiconductor substrate, so as to form a modified region within the semiconductor substrate, and causing the modified region to form a part which is intended to be cut; and

expanding the sheet after the step of forming the part which is intended to be cut, so as to cut the semiconductor substrate along the part which is intended to be cut.

Claim 5 (Currently Amended): A method of cutting a semiconductor substrate according to claim 3 [[or 4]], wherein the modified region is a molten processed region.

Claim 6 (Currently Amended): A method of cutting a semiconductor substrate according to ~~one of claims 1 to~~ claim 4, wherein the modified region is a molten processed region ~~a fracture is caused to reach a front face of the semiconductor substrate on the laser light entrance side from the part which is intended to be cut acting as a start point.~~

Claim 7 (Currently Amended): A method of cutting a semiconductor substrate according to ~~one of claims~~ claim 1 ~~[[to 4]]~~, wherein a fracture is caused to reach a [rear] front face of the semiconductor substrate on the ~~side opposite from the laser light entrance side from~~ the part which is intended to be cut acting as a start point.

Claim 8 (Currently Amended): A method of cutting a semiconductor substrate according to ~~one of claims 1 to 4~~ claim 2, wherein a fracture is caused to reach a front face of the semiconductor substrate on the laser light entrance side ~~and a rear face on the side opposite therefrom~~ from the part which is intended to be cut acting as a start point.

Claim 9 (Currently Amended): A method of cutting a semiconductor substrate according to claim 3, wherein a fracture is caused to reach a front face of the semiconductor substrate on the laser light entrance side from the part which is intended to be cut acting as a start point ~~[[,]] the method comprising the steps of:~~

~~irradiating a semiconductor substrate having a sheet bonded thereto by way of a die-bonding resin layer with laser light while locating a light converging point within the semiconductor substrate, so as to form a modified region caused by multiphoton absorption within the semiconductor substrate, and causing the modified region to form a part which is intended to be cut;~~

~~generating a stress in the semiconductor substrate along the part which is intended to be cut after the step of forming the part which is intended to be cut, so as to cut the semiconductor substrate along the part which is intended to be cut; and~~

~~expanding the sheet after the step of cutting the semiconductor substrate, so as to cut the die bonding resin layer along a cut section of the semiconductor substrate.~~

Claim 10 (Currently Amended): A method of cutting a semiconductor substrate according to claim 4, wherein a fracture is caused to reach a front face of the semiconductor substrate on the laser light entrance side from the part which is intended to be cut acting as a start point [[,]] the method comprising the steps of:

~~irradiating a semiconductor substrate having a sheet bonded thereto by way of a die bonding resin layer with laser light while locating a light converging point within the semiconductor substrate under a condition with a peak power density of at least 1×10^8 (W/cm²) at the light converging point and a pulse width of 1 μ s or less, so as to form a modified region caused by multiphoton absorption within the semiconductor substrate, and causing the modified region to form a part which is intended to be cut;~~

~~generating a stress in the semiconductor substrate along the part which is intended to be cut after the step of forming the part which is intended to be cut, so as to cut the semiconductor substrate along the part which is intended to be cut; and~~

~~expanding the sheet after the step of cutting the semiconductor substrate, so as to cut the die bonding resin layer along a cut section of the semiconductor substrate.~~

Claim 11 (Currently Amended): A method of cutting a semiconductor substrate according to claim 1, wherein a fracture is caused to reach a rear face of the semiconductor

substrate on the side opposite from the laser light entrance side from the part which is intended to be cut acting as a start point~~[[,]] the method comprising the steps of:~~

~~irradiating a semiconductor substrate having a sheet bonded thereto by way of a die bonding resin layer with laser light while locating a light converging point within the semiconductor substrate, so as to form a modified region within the semiconductor substrate, and causing the modified region to form a part which is intended to be cut;~~

~~generating a stress in the semiconductor substrate along the part which is intended to be cut after the step of forming the part which is intended to be cut, so as to cut the semiconductor substrate along the part which is intended to be cut; and~~

~~expanding the sheet after the step of cutting the semiconductor substrate, so as to cut the die bonding resin layer along a cut section of the semiconductor substrate.~~

Claim 12 (Currently Amended): A method of cutting a semiconductor substrate according to claim 2, [[11]] wherein a fracture is caused to reach a rear face of the semiconductor substrate on the side opposite from the laser light entrance side from the part which is intended to be cut acting as a start point ~~the modified region is a molten processed region.~~

Claim 13 (Currently Amended): A method of cutting a semiconductor substrate according to claim 3, wherein a fracture is caused to reach a rear face of the semiconductor substrate on the side opposite from the laser light entrance side from the part which is intended to be cut acting as a start point ~~having a front face formed with a functional device along a line to cut, the method comprising the steps of~~ [[:]]

~~irradiating the semiconductor substrate with laser light while using a rear face of the semiconductor substrate as a laser light entrance surface and locating a light converging point within the semiconductor substrate, so as to form a modified region, and causing the modified~~

~~region to form a cutting start region within the semiconductor substrate inside of the laser light entrance surface by a predetermined distance along the line to cut;~~

~~attaching an expandable holding member to the rear face of the semiconductor substrate by way of a die bonding resin layer after forming the cutting start region; and~~

~~expanding the holding member after attaching the holding member, so as to cut the semiconductor substrate and die bonding resin layer along the line to cut.~~

Claim 14 (Currently Amended): A method of cutting a semiconductor substrate according to claim 4, wherein a fracture is caused to reach a rear face of the semiconductor substrate on the side opposite from the laser light entrance side from the part which is intended to be cut acting as a start point 13, further comprising the step of grinding the rear face of the semiconductor substrate such that the semiconductor substrate attains a predetermined thickness before forming the cutting start region.

Claim 15 (Currently Amended): A method of cutting a semiconductor substrate according to claim 1, wherein a fracture is caused to reach a front face of the semiconductor substrate on the laser light entrance side and a rear face on the side opposite therefrom from the part which is intended to be cut acting as a start point 13 or 14, wherein the modified region includes a molten processed region.

Claim 16 (Currently Amended): A method of cutting a semiconductor substrate according to ~~one of claims 13 to 15~~ claim 2, wherein a fracture is caused to reach ~~[[the]]~~ a front face of the semiconductor substrate on the laser light entrance side and a rear face on the side opposite therefrom from the part which is intended to be cut acting as a start point ~~from the cutting start region acting as a start point when forming the cutting start region.~~

Claim 17 (Currently Amended): A method of cutting a semiconductor substrate according to ~~one of claims 13 to 15~~ claim 3, wherein a fracture is caused to reach ~~the rear~~ a front face of the semiconductor substrate on the laser light entrance side and a rear face on the side opposite therefrom from the part which is intended to be cut acting as a start point from the cutting start region acting as a start point when forming the cutting start region.

Claim 18 (Currently Amended): A method of cutting a semiconductor substrate according to ~~one of claims 13 to 15~~ claim 4, wherein a fracture is caused to reach ~~[[the]]~~ a front face and rear faces of the semiconductor substrate on the laser light entrance side and a rear face on the opposite therefrom from the part which is intended to be cut acting as a start point from the cutting start region acting as a start point when forming the cutting start region.

Claim 19 (New): A method of cutting a semiconductor substrate, the method comprising the steps of:

irradiating a semiconductor substrate having a sheet bonded thereto by way of a die-bonding resin layer with laser light while locating a light-converging point within the semiconductor substrate, so as to form a modified region caused by multiphoton absorption within the semiconductor substrate, and causing the modified region to form a part which is intended to be cut;

generating a stress in the semiconductor substrate along the part which is intended to be cut after the step of forming the part which is intended to be cut, so as to cut the semiconductor substrate along the part which is intended to be cut; and

expanding the sheet after the step of cutting the semiconductor substrate, so as to cut the die-bonding resin layer along a cut section of the semiconductor substrate.

Claim 20 (New): A method of cutting a semiconductor substrate, the method comprising the steps of:

irradiating a semiconductor substrate having a sheet bonded thereto by way of a die-bonding resin layer with laser light while locating a light-converging point within the semiconductor substrate under a condition with a peak power density of at least 1×10^8 (W/cm²) at the light-converging point and a pulse width of 1 μ s or less, so as to form a modified region caused by multiphoton absorption within the semiconductor substrate, and causing the modified region to form a part which is intended to be cut;

generating a stress in the semiconductor substrate along the part which is intended to be cut after the step of forming the part which is intended to be cut, so as to cut the semiconductor substrate along the part which is intended to be cut; and

expanding the sheet after the step of cutting the semiconductor substrate, so as to cut the die-bonding resin layer along a cut section of the semiconductor substrate.

Claim 21 (New): A method of cutting a semiconductor substrate, the method comprising the steps of:

irradiating a semiconductor substrate having a sheet bonded thereto by way of a die-bonding resin layer with laser light while locating a light-converging point within the semiconductor substrate, so as to form a modified region within the semiconductor substrate, and causing the modified region to form a part which is intended to be cut;

generating a stress in the semiconductor substrate along the part which is intended to be cut after the step of forming the part which is intended to be cut, so as to cut the semiconductor substrate along the part which is intended to be cut; and

expanding the sheet after the step of cutting the semiconductor substrate, so as to cut the die-bonding resin layer along a cut section of the semiconductor substrate.

Claim 22 (New): A method of cutting a semiconductor substrate according to claim 21, wherein the modified region is a molten processed region.

Claim 23 (New): A method of cutting a semiconductor substrate having a front face formed with a functional device along a line to cut, the method comprising the steps of:

irradiating the semiconductor substrate with laser light while using a rear face of the semiconductor substrate as a laser light entrance surface and locating a light-converging point within the semiconductor substrate, so as to form a modified region, and causing the modified region to form a cutting start region within the semiconductor substrate inside of the laser light entrance surface by a predetermined distance along the line to cut;

attaching an expandable holding member to the rear face of the semiconductor substrate by way of a die-bonding resin layer after forming the cutting start region; and

expanding the holding member after attaching the holding member, so as to cut the semiconductor substrate and die-bonding resin layer along the line to cut.

Claim 24 (New): A method of cutting a semiconductor substrate according to claim 23, further comprising the step of grinding the rear face of the semiconductor substrate such that the semiconductor substrate attains a predetermined thickness before forming the cutting start region.

Claim 25 (New): A method of cutting a semiconductor substrate according to claim 23, wherein the modified region includes a molten processed region.

Claim 26 (New): A method of cutting a semiconductor substrate according to claim 23, wherein a fracture is caused to reach the front face of the semiconductor substrate from the cutting start region acting as a start point when forming the cutting start region.

Claim 27 (New): A method of cutting a semiconductor substrate according to claim 23, wherein a fracture is caused to reach the rear face of the semiconductor substrate from the cutting start region acting as a start point when forming the cutting start region.

Claim 28 (New): A method of cutting a semiconductor substrate according to claim 23, wherein a fracture is caused to reach the front and rear faces of the semiconductor substrate from the cutting start region acting as a start point when forming the cutting start region.